

A DYNAMIC FORCE THAT INITIATES MOTION TO A BODY OR SYSTEM

# IMPULSE

WINTER 1993



SOUTH DAKOTA STATE UNIVERSITY  
COLLEGE OF ENGINEERING, BROOKINGS



## Dear Alumni:

The articles in this issue of our Impulse emphasize the importance of diversity within our College. In your organizations, I am sure that all of you has noticed the impact of a number of diversity issues. Within the College of Engineering, diversity is a very broad topic and includes not only the concerns regarding minorities and women, but also the needs and concerns of international students and nontraditional students as they return for additional training and education.

These concerns are continually being addressed as we expand our outreach programs to include Sioux Falls; and in the future we are anticipating nontraditional student participation in cities throughout the state. We are now offering programs in Civil Engineering, Electrical Engineering, Electronic Engineering Technology, Mechanical Engineering, the Master of Science in Industrial Management and Food and Biological Engineering in Sioux Falls. Our students in the surrounding cities and towns are working men and women who have very special educational needs and needs for accommodations in terms of timing of classes and registration, etc.

On campus, the College of Engineering graduate program has expanded by at least 50 percent over the last two years as our faculty members develop areas of research excellence in each of our engineering programs. This added research effort has attracted U.S. and international students. These diverse cultures provide an excellent broadening experience for each of our students. As you will note in the following articles, we have some exciting programs developing for our Native Americans and women in engineering. The AISES (American Indian Science and Engineering Society) chapter and SWE (Society of Women Engineers) chapter have organized over the last semester and are already planning and executing programs to inform K-12 students of the opportunities in sciences and engineering careers, as well as encouraging them to continue their interests in mathematics and the sciences. In addition, as these people contact the students in our grade schools and high schools, they provide excellent role models to attract our Native American population, as well as increase the number of women continuing their interests in the sciences and engineering careers.

Finally, I urge you to consider interviewing our engineers, scientists, mathematicians and technologists when you are considering new or replacement positions within your organizations. We are doing well in placement of our graduates, but it is always better if they can meet and talk to a fellow SDSU alumnus.

I would like to again invite you to stop by the campus for a visit, see past acquaintances and enjoy your alma mater.

Sincerely yours,

Duane E. Sander, P.E., Ph.D.  
Dean of Engineering

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# **IMPULSE**

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### **ABOUT THE COVER:**

From far left: Damon de Wit, a recent SDSU mechanical engineering graduate, works at the Northern Plains Biostress Lab; SDSU College of Engineering Dean Duane Sander helps register students for spring semester at the Sioux Falls Center for Public Higher Education; SDSU President Robert Wagner speaks to students on the Brookings campus as well as many other sites statewide through the South Dakota Rural Development Telecommunications Network.

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# OUTREACH

## College of Engineering expands outreach programs

**Y**ears ago if people wanted a college degree, they attended right after high school and drove to the school of their choice. Now, South Dakota State University is fulfilling its land-grant mission by providing education to adult students of all ages at various locations throughout the state.

The College of Engineering plays its part in the mission by providing outreach programs in Sioux Falls and Rapid City. It also delivers classes to Pierre's Capital University Center through interactive television. Other classes will be offered to other major cities in the state through the South Dakota Rural Telecommunications Network.

In Rapid City, most of the 70 students in the Electronic Engineering Technology program are Air Force personnel at Ellsworth Air Force Base who are taking classes for a variety of reasons.

"They may want to improve their chances for promotion within the Air Force, expand their knowledge of electronics and improve their communication skills," said Duane Sander, dean of the College of Engineering. "Many are looking at retirement or discharge because of cutbacks and would like to have training in a specialty area in order to get a civilian job."

In Sioux Falls, bachelor's degrees

are offered in electrical engineering, civil engineering, mechanical and food and bio-materials engineering and electronic engineering technology, as well as a master's degree in industrial management.

Sander said the programs are primarily for people who are working and can't take the time to come to the Brookings campus. "They are getting an engineering degree in order to improve their chances for advancement and become more knowledgeable in their

field," he said.

"These students have a variety of backgrounds and

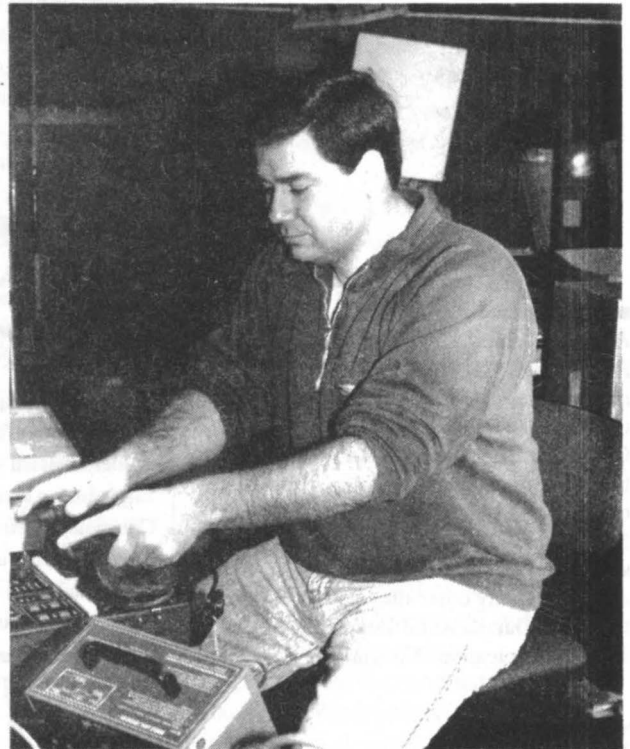
responsibilities, so we are developing programs to fully enhance their capabilities."

If students enter as freshmen and take only one or two night courses a semester, they generally graduate in eight to 10 years. Students wanting to graduate sooner, however, may choose to drive to the Brookings campus.

Kevin Brady is a junior electrical engineering major from Sioux Falls. He drives to

class in Brookings every day with other students from Sioux Falls.

Brady's interest in electronic devices and how to fix them developed during the 15 years he was a radio broadcaster. Because he saw no connection between performance and



After serving in the Army Medical Corps and repairing medical equipment, Andy Giddings returned to school for career enhancement.

reward in broadcasting, he decided to return to school for a bachelor's degree in engineering.

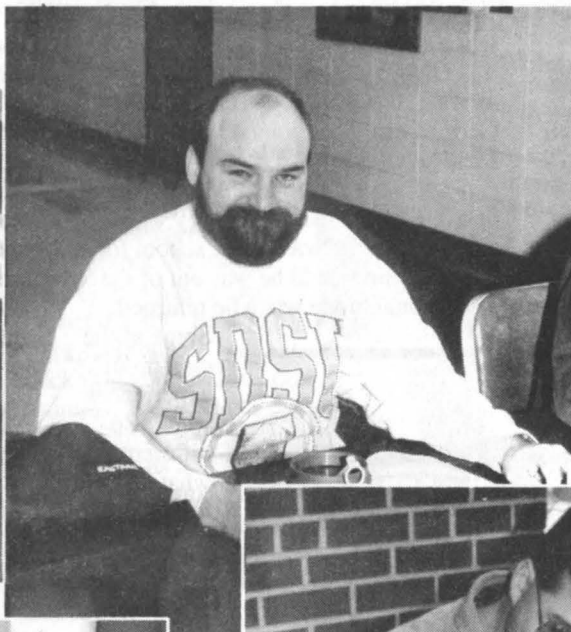
In the late 70's, Brady had two years of college experience. "Back then, there weren't many nontraditional students," he said. "Today, classrooms are filled with non-trads and they blend in. When I first started back to school, I thought the young students would have the advantage, but I found that wasn't the case. In less than a semester, I was in the mainstream."

The commute puts extra stress on the family. "My wife works and I work part-time, so we don't have a whole lot of quality time," Brady said. "The stress shows, especially around test time. But we have a countdown of semesters and keep thinking about the end result. In the meantime, it's a strange lifestyle."

Jerry Stevens, a senior civil engineering major from Worthing, is familiar with the stress of getting to campus every day. Stevens either drives

*"People considering a return to school, should go for it. Don't be afraid of coming back if you have the time and the money. I found it wasn't any more difficult than when I was going to school before. And don't worry about the age differences of the students. It's the same type of mix you find out in industry."*

**Mike Monnens**



*Nontraditional students are a growing part of the student population at the South Dakota State University College of Engineering. Pictured, clockwise from top left, are: Jerry Stevens, senior civil engineering student from Worthing; Reed McKee, senior mechanical engineering major from Brookings; Kevin Brady, junior electrical engineering major from Sioux Falls; and Sharon Harrison, junior computer science major from Brookings.*



the distance alone or commutes with others.

"I have come up to school on days when the interstate was a sheet of ice and I was the only one on the road," he said. "Now I have a four-wheel drive pickup, so that helps."

Despite the hardships, Stevens said he likes school and the friends he meets there. Returning to college, he said, has helped him gain self-confidence.

Sharon Harrison, a junior computer science major from Brookings, has also gained self-confidence from her collegiate experience. She said she decided to go back to school because she was working, but barely making it.

"I had been thinking about going back, but I thought I was too old," she said. "Then I saw a show on TV where a lady said she couldn't go back to school because she would be 65 in four years

when she graduated. Her friend said, 'How old will you be in four years if you don't go to school?' So I decided this was the time."

In her previous job, Harrison became fascinated by computers when her bookkeeping system was switched from paper to computer. She said she asked several questions of the man who was transferring the system. He took the time to explain how and why he was doing what he did.

She started taking general courses because she knew it would be easier to get back into studying. "I worried about more problems than I actually had," she said. "I thought I would stand out in a crowd and that the younger generation wouldn't accept me, but they think of me as one of them. Some of my best friends are 19 and 20 years old."

Some students, like Sharon, take

summer school and full-time classes in order to graduate as soon as possible. Others take classes as they fit into their tight work schedules.

Damon de Wit started college in 1980. He stayed for six semesters, then took seven and a half years off to work. In December, he graduated with a mechanical engineering degree.

De Wit is manager of the Brookings office of Baete, Forseth Inc., which has the contract for the heating and ventilation systems at the Northern Plains Biostress Laboratory currently being built at SDSU. The company started working last July and will be involved until probably August, when all of their systems are running and have been tested.

When de Wit started college again, he took 13 or 14 credits a semester until the fall of 1992, when he took 21 so he

# OUTREACH

could graduate. "I had a very flexible work schedule, so I'd try to get things done after school and between classes," he said. "You divide up your time as best you can and go from there."

With a wife and kids, de Wit found taking classes much more difficult than before. "When you start out with something after high school, keep going instead of stopping

after getting started," he said. "It's a lot easier."

Sometimes going to college right after high school isn't feasible for students. Reed McKee, a senior mechanical engineering major from Brookings, said he didn't have the discipline or the money necessary for college, so he went into the military.

"After I had been in the military for a few years, I saw that I needed an education to get ahead in life," McKee said. "During the service I got interested in engineering. One of the big things I've found now is that I'm more mature and more ready to concentrate on my studies, not my social life."

Though ready to study, the math orientation of engineering was tough for McKee. "I started with lower-level math courses that brought me up to speed," he said. "Since I knew I started at a disadvantage, I haven't carried heavy loads."

McKee chose SDSU because he knew he would get a broad base of knowledge in engineering. Also, moving frequently with the military made him "homesick for South Dakota."

Although his official home isn't South Dakota, Andy Giddings felt like he was coming home when he came to SDSU. Giddings' grandfather, Joseph Giddings, was head of the English Department from 1936 to 1967.

"I've been in Brookings every summer since I was one," Giddings said. "SDSU's a good, solid engineering

school, plus has a reasonable cost."

Giddings grew up as an Army child in West Berlin, East Germany. He left Germany in 1978, joined the Army Medical Corps and repaired medical equipment. He is now a junior majoring in engineering and technology.

Because he was out of school for so long, Giddings said he was out of the educational mode when he returned.

Some of the classroom experiences were also different than what he found in the working world.

"The teachers have to use examples for the younger students to understand," he said.

"People over 30 relate to real world

experiences and need specifics. The younger students relate to the theoretical while the older students relate to their own experiences."

Whatever difficulties may be encountered, Giddings said getting a degree is definitely career-enhancing. Such was the case for Mike Monnens, a senior agricultural engineering major from Brookings who worked for several years selling hydraulic equipment. "I was finding that I was doing engineering, but I couldn't talk to customers as well as I wanted because of lack of training," he said.

Now Monnens works as a student assistant, testing irrigation sprinklers and their effect on soil erosion. Although the job doesn't directly relate to his particular area of agricultural engineering, Monnens said it has many benefits. "It's given me an opportunity to get acquainted with faculty in ag engineering," he said. "It gave me a chance to support part of my expenses through school and it shows employers that I was working."

Monnens said he is looking forward to graduation in May so he can spend more time with his wife and young son,

as well as find a job in a hydraulics-related industry.

People considering a return to school, Monnens said, should "go for it. Don't be afraid of coming back if you have the time and the money. I found it wasn't any more difficult than when I was going to school before. And don't worry about the age differences of the students. It's the same type of mix you find out in industry."



*"I've been in Brookings every summer since I was one. SDSU's a good, solid engineering school, plus has a reasonable cost."*

*Andy Giddings*

# First Sioux Falls EET grad assumes advising role

When Jason Job first started taking classes in the spring of 1986, he never realized he would be an adviser to other students in his situation.

Job was one of the first graduates from the South Dakota State University Electronic Engineering Technology outreach program in Sioux Falls. He received his degree in December 1991.

When he returned to school, he was working at Sencore in Sioux Falls as a

production analyzer. "In that job, I corrected problems with products," he said. "I found that I wanted to get more into engineering, so I started taking night classes."

Job previously received a two-year degree from Lake Area Vo-Tech in Watertown, so he had some classroom experience. Although he and his wife Laurie had to make some adjustments to fit school into their time schedules, Job said the sacrifice was worth it.

"I think getting the EET degree has helped tremendously," he said. "The theoretical background and hands-on training I received has really helped me in my current job as a design engineer at Sencore."

Now Job helps the SDSU Sioux Falls Center for Public Higher Education by talking to prospective students and

answering their questions about what courses they need to take, what time requirements are involved and giving them other pertinent information.

"I found the completion of this program both enjoyable and rewarding," Job said. "I hope that what I've learned can benefit others toward the realization of their goals."



Jason Job advises a student at the South Dakota State University Sioux Falls Center for Public Higher Education.

## Engineering students run Karate for Kids

When people think of engineering students, they see visions of calculators and books. But studying is not the only thing on the minds of students Kerri Nitzschke and Tim Rust.

Nitzschke, a senior mechanical engineering major from Sioux City, Iowa, owns Karate for Kids, a Brookings taekwondo business for 5- to 13-year-old children. She teaches separate classes for adults.

She started taekwondo when she came to South Dakota State University. She said she likes the fact that taekwondo is a long-term physical activity. "When you're done with four years of sports in high school or college, you're done," she said. "This can continue into the future and the benefits are more individual."

The business was started six years ago by Nitzschke's instructor. Nitzschke was the assistant for two years, then, when the instructor graduated, she took over. Now Rust, a freshman civil

engineering major from Valley Springs, is Nitzschke's assistant.

Rust has been involved in taekwondo for 14 years. He said the assistantship is very beneficial. "As far as the job goes, it will help pay for school," he said. "I also gain experience and knowledge with the business aspect."

"Being able to own your own business and manage your time gives you a better understanding of where the money is going," Nitzschke said. "Also, when I have the chance to get into a management position, I can say I already have

managed."

But learning about business isn't the only reason the two are involved with Karate for Kids. "When you see your students' accomplishments, it makes you feel good because you're helping them achieve their goals and because you had a part in what they did," Rust said.

"Kids are why I teach," Nitzschke said. "Not only do they improve in



Left: Kerri Nitzschke positions a young taekwondo student. Above: Nitzschke and Tim Rust demonstrate the right moves.

taekwondo, but also in their personal lives. One of the biggest kicks I get is when parents say how their kids have changed to become more self-confident and polite. That's one of the biggest rewards I can ask for."



# SWE

## *New SWE chapter accepted 'like seeds on fertile ground'*



*Pictured during the Nov. 12 banquet, when the South Dakota State University Society of Women Engineers (SWE) Chapter received their official charter, are, left to right: Renae Kruse, chapter vice president; Judie Chen, chapter treasurer; Angela Stotesbury, chapter president; Judith Morris, SWE Region H coordinator; Madeleine Andrawis, chapter advisor; and Duane Sander, dean of the SDSU College of Engineering.*

*"It helps knowing you're not alone, that there are other girls going through the program. Just to meet monthly and do all the things they want to do — while having fun."*

*Madeleine Andrawis*

Some things are just meant to be. Like the new Society of Women Engineers (SWE) chapter at South Dakota State University. Getting it started "was like throwing seeds on a very fertile ground," said chapter advisor Madeleine Andrawis. "Definitely, the need was there."

The seed was planted last March by Eleanor Baum, the dean of engineering at the Cooper Union for the Advancement of Science and Art in New York. While lecturing at SDSU, Baum mentioned SWE to Andrawis, assistant professor of electrical engineering.

"That was the first time I heard about it," Andrawis said. "I got very excited. Right after she left, I started looking for connections."

Andrawis found her connection through a magazine article that mentioned SWE. She tracked down the reporter who wrote the story, got the phone number for SWE headquarters in New York and called for information. From there, it's been a whirlwind success.

Andrawis volunteered to be the

chapter advisor. Other women faculty members of the SDSU College of Engineering helped by sending letters to all women engineering students and helping plan the organizational meetings. For the sign-up meeting, Duane Sander, College dean, bought pizza.

"It brought some people and it worked," Andrawis said. "People came and were interested."

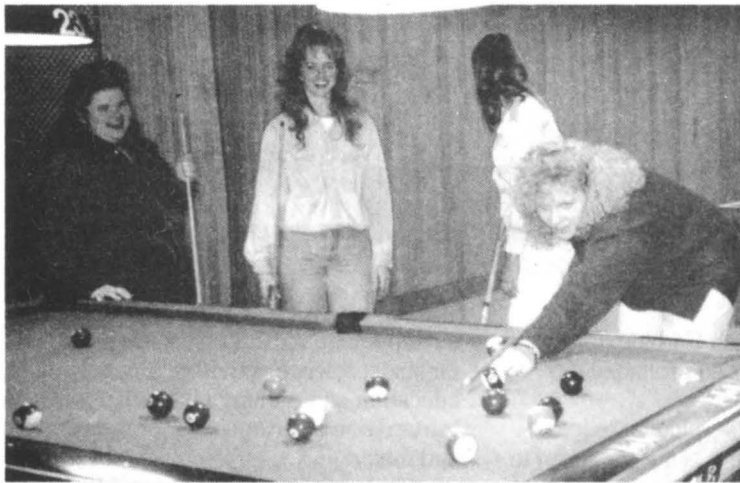
Ten members were needed to apply for a charter. That night, 40 students came; 17 signed up, writing \$15 checks for their first year dues. That alone impresses Andrawis.

"That came at the end of the semester, a week before finals, which is a very busy time," she said, "and it was an item the students did not have in their budgets. So they must be really interested. I think it was like throwing seeds on a very fertile ground. I hope we keep growing now."

Members of SDSU SWE benefit two major ways: from the support of the group and from the opportunities available through the chapter.

"It helps knowing you're not alone, that there are other girls going through the program," Andrawis said. "Just to meet monthly and do all the things they want to do — while having fun." SWE also opens the door to scholarships, rewards, outreach





*Membership in the South Dakota State University Chapter of Society of Women Engineers provides students many opportunities, including camaraderie fellowship and fun. SDSU SWE members pictured enjoying a game of pool are, left to right: Nichole Lowe, Cheri Erstad, Tonya Weaver and Angela Stotesbery.*

programs and a wide variety of activities.

This fall, seven SDSU chapter members attended a regional conference, which pumped up the chapter's reservoir of ideas and enthusiasm.

"It was a wonderful experience," Andrawis said. "We felt very welcomed. We felt right in place — the right place. At that regional conference, we felt we were so encouraged to go with our efforts, which was important. Being we were just starting, we needed all the encouragement we could get. It really makes things easier when you have some connections and know the people, and that was all accomplished. The level (of enthusiasm) got really high after the conference."

They even came home with a little seed money to help the chapter along. The SWE Chapter from Michigan Technological University in Houghton, Mich., gifted the local group with a \$250 check.

"We were really touched by that," Andrawis said. "We weren't expecting that. We expected ideas for fundraisers, but we didn't expect money."

Helping hands have been there all along the way. The group's attendance at the conference was made possible by Daktronics in Brookings, which paid for four to go, and Dean Sander, who paid for three.

Carol Peterson, SDSU vice president for academic affairs, wrote Andrawis a letter of support and encouragement.

Mary Perpich, through the Bush Foundation Fund, paid for all student dinners at the chapter's November banquet.

just helped in everything," Andrawis said. "I feel I'm not alone. There's support there at all levels, from students to faculty to administration. They're all encouraging. It's a good feeling. People are working hard. Even people who aren't working are encouraging. It makes you feel like working even harder."

"I was excited from the very beginning. But it was like knocking very big walls. I didn't know if I could do it. But it looks like we're starting off right."

The chapter's up, running and active with more than 30 members and growing. The group meets monthly and is presently aiming for an award available to newly-formed chapters.

SWE concentrates on freshmen when it comes to recruitment, which is important to any young organization.

"We aim for freshmen because they are without any technical society at all," Andrawis said. When freshmen are starting out, she said, they aren't familiar with their own discipline or the disciplines of the other engineering departments or of the technical societies available for their particular discipline. The SWE chapter helps them gain that knowledge. Later, they can choose to join a technical society, remain with SWE or both.

"We in no way try to take students away from the technical societies," Andrawis said. "We have a good number of seniors and graduate students, which means this is not taking them away from their technical societies."

SWE has 10 regions nationwide. The SDSU chapter is part of Region H, which includes 38 schools in eight

states: South Dakota, North Dakota, Illinois, Iowa, Minnesota, Indiana, Michigan and Wisconsin.

Anyone interested in supporting the SDSU Chapter of SWE or wanting more information is welcome to write Dr. Madeleine Andrawis, Electrical Engineering Department, Box 2220 Harding Hall, South Dakota State University, Brookings, SD 57007, or call her at (605) 688-4527.

### *SDSU SWE Chapter members:*

President: Junior Angela Stotesbery of Clinton, Minn.

Vice president: Junior Renae Kruse of George, Iowa

Secretary: Freshman Carrie Jennings of Sioux Falls

Treasurer: Junior Judie Chen of Brookings

Committee coordinators:

Outreach: Junior Tonya Weaver of Brookings

Technical & New Members: Graduate student Qiong Chen of Brookings and junior Cheri Erstad of Lake Norden (co-coordinators)

Fundraising: Junior Nichole Lowe of Bryant

Other chapter members:

Freshman Catina Quick of Alcester

Freshman Amy Bullis, freshman Christina Green of Brandon

Freshman Jennifer Mikkelsen of Britton

Freshman Dawn Arnold, senior Jill LaPlante, freshman Tenison Stone, senior Tonya Thompson, senior Minna Vainikka of Brookings

Senior Melissa Christie of Bruce

Junior Annette Hueske of De Witt, Neb.

Senior Carmon Duan of Hartford

Junior Sharon Huber, junior Kristen Winters of Huron

Senior Tricia Gillen of Jasper, Minn.

Freshman Heidi Donohue, sophomore Janele Heyer of Madison

Freshman Kristin Lulewicz, sophomore Ann Quenzer of Mitchell

Freshman Paula Meier of New Ulm, Minn.

Junior Paula Graves of Pierre

Senior Caroline Kroll of Pipestone, Minn.

Freshman Deanna Funke, freshman Kelly Stengel of Sioux Falls

Sophomore Carrie Brown of Spearfish

Junior Elizabeth Nelson of Spencer, Iowa

Freshman Vickie Saboe of Willow Lake

Senior Anita Kotschegarow of Yankton

# AISES

## SDSU Chapter of AISES reaches out

Outreach is a major goal of the newly-formed SDSU Chapter of the American Indian Science and Engineering Society (AISES).

Members of the SDSU AISES Chapter, which formed in November, make weekly trips to Flandreau to tutor junior high students. Their goal is to eventually send a tutor every day and to conduct a variety of high school activities on the reservations.

"AISES asks its members to give back to the younger Native Americans, to try to help them educationally," chapter president John Trebesch said. "AISES' whole thing is education, and to try to be role models for the younger students, to show them that education is the way to change their life."

Before AISES formed, Trebesch, a sophomore engineering student from Brookings, tutored college students in Algebra. So when Mary Hasvold, educational coordinator for the Santee Sioux Tribe, called SDSU Native American Student Advisor Velva Lu Spencer looking for students who could tutor in Flandreau, Spencer suggested Trebesch. The chapter is furthering his endeavors.

"After we started AISES, we thought that would be a good thing for the chapter to do," Trebesch said. "AISES' main priority is to educate the younger Native American students. What they lean towards is to get them interested in sciences." Presently, four local AISES members tutor Flandreau junior high students once or twice a week in a variety of subject areas.

The group wants to host a math camp and help organize high school AISES chapters. During spring break, they hope to visit reservation schools to make presentations to students interested in engineering and science.

AISES started in Arkansas in April 1977, when a group of Native American engineers and scientists got together and started talking about how few Native Americans enter the engineering and science fields. A.T. "Andy" Anderson, a Mohawk Indian who was a chemical

engineer with Union Carbide, took that discussion to heart and founded the organization.

Any student is welcome to join AISES; membership is not restricted to American Indians or to engineering students, Trebesch said. Professionals already working in the field may apply for professional memberships. Anyone

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*"AISES' whole thing is education, and to try to be role models for the younger students, to show them that education is the way to change their life."*

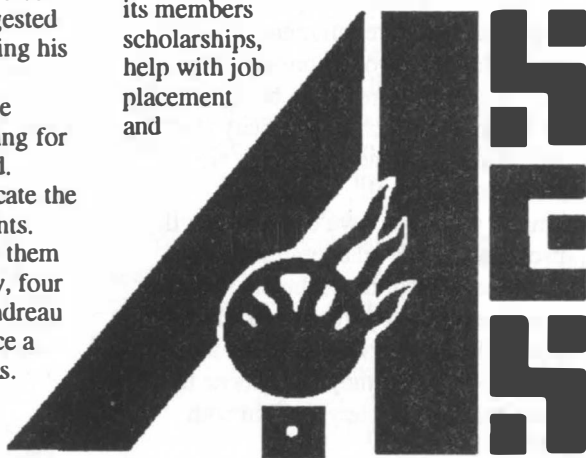
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*John Trebesch*

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interested in joining AISES is welcome to call Trebesch at 692-8694.

AISES offers its members scholarships, help with job placement and



numerous educational programs.

For younger students, AISES sponsors math and science enrichment programs for grades eight through 12; math and science camps; high school scholarships, chapters and clubs.

For teachers, the organization provides national and regional workshops, individualized workshops, curriculum training.

In the area of curriculum

development, AISES offers teacher manuals; science activities; alcohol education and training materials; information clearinghouse for speakers and materials.

Trebesch first heard about AISES one summer while he was working as an engineering assistant for the Bureau of Indian Affairs in Aberdeen. He learned even more about AISES when he started attending SDSU, where Duane Sander, dean of the College of Engineering, gave him a packet of information on the organization.

Trebesch got the SDSU chapter up and running by holding organizational meetings, recruiting members and collecting applications. Officers were elected Nov. 18. Trebesch is president. Donis Drappeau, freshman general registration student from Wagner, is vice president. Henry "Hank" Amiotte, sophomore arts and science student from Brookings, is secretary/treasurer. The chapter presently has nine members.

The biggest challenge for Trebesch has been consuming the massive amounts of information about AISES so he's prepared to answer questions students may have.

But he's found support from the College of Engineering. Dean Sander bought pizza and pop for the election of officers meeting. He also paid the \$10 annual dues for each of the initial applicants. Chapter advisers Warren Hein, professor and head of the Physics Department, and Larry Browning, assistant professor of physics, attended organizational meetings and offered their ideas and suggestions.

"As students we don't always know our limits on funding, so they can be a big help on that," Trebesch said.

# ENGINEERING EXPLORATION DAYS

*YOUR FOUNDATION FOR SUCCESS*

## *Engineering Exploration Days to include Inventors Congress April 22-23*



For the second year in a row, inventors from around the Midwest have the opportunity to participate in the South Dakota Inventors Congress to be held at South Dakota State University in conjunction with Engineering Exploration Days (EED).

The Inventors Congress will begin Thursday evening, April 22, with a workshop about patenting and protecting inventions and creative financing for businesses based on inventions.

EED will begin Friday morning, April 23, with a variety of contests for high school and college students. The Distinguished Engineer banquet will be held that evening.

Lionel Dayton, a junior civil engineering major from Roscoe, is co-chair of the high school students committee for EED. "The event gives students a chance to see what the College of Engineering has to offer," Dayton said. "They also have a chance to brainstorm and work on projects themselves with the contests we have, so they learn to solve problems. That's what engineers do."

Although engineering faculty advise students, EED is run by the students, according to Byron Garry, general engineering instructor and adviser for EED.

"The college students can get involved in planning an event and

*Students measure carefully during a previous contest for Engineering Exploration Days.*

working in a group, which is something they don't have a chance to do in the classroom," Garry said.

Some of the events that high school and college students can compete in are bridge building, pentathlon, knowledge tests and a paper airplane contest. SDSU seniors also have projects which are designed, built and tested as part of their coursework. Some of those submitted in the past vary from a garden composting unit to an electronic control system for a manufacturing line. This will also be the first time high school inventors will have their own category in the Inventors Congress.

Companies from around the region will have booths describing their businesses. Representatives will be available to talk to students about job opportunities and to inventors about their products.

The public is invited to attend the Inventors Congress and EED. The displays will be open to the public from 10 a.m. to 5 p.m. April 23 at the Health, Physical Education and Recreation Center at SDSU.

"It's a good chance to see what students are capable of doing in their design projects," Garry said, "and it's always interesting to see what practical things the inventors create to make life a little easier."

For more information about the South Dakota Inventors Congress or Engineering Exploration Days,

**call 605-688-4161**

**or write  
Dean of Engineering  
P.O. Box 2219  
SDSU  
Brookings, S.D. 57007**

# PHONATHON

*set for Feb. 15-20*

South Dakota State University students will take to the phones Feb. 15-20 to raise money for the College of Engineering during National Engineers' Week.

The Phonathon is in its tenth year. Last year \$100,000 was raised during the Phonathon and follow-up calls. Faculty chairman Charles Tiltrum said the goal this year is to raise at least that much.

Tiltrum, associate professor of civil engineering, has been involved in the Phonathon all 10 years. Former Phonathon chairwoman Teresa Hein is on sabbatical to complete her doctorate.

Money raised through alumni during the Phonathon is used to purchase computer materials and lab equipment and to fund projects that will benefit the College of Engineering and its students.

"The money is important for each of the departments," Tiltrum said. "It is budgeted wisely and spent prudently."

"Because the Phonathon pays for many field trips and equipment for students, a lot of things wouldn't happen without it," said student chairman Rob Cameron, a senior electrical engineering major from Sioux Falls.

Although the monetary benefits of the Phonathon are very important, Tiltrum said other aspects are also rewarding.

"We stress to students that the whole thing isn't just to ask for money, but it's for contacts, job leads and to update alumni records," he said. "I know students who got summer and full-time jobs through these contacts."

Tiltrum said the Phonathon has other benefits, too. "Some students say they would like to help with the Phonathon, but they don't want to make

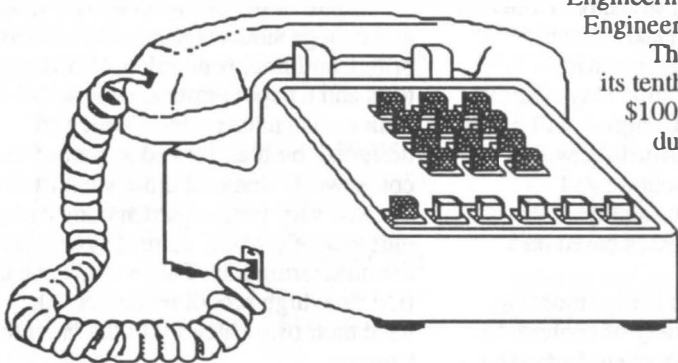
phone calls," he said. "They need to realize no matter what their positions are, engineers will have to talk on the phone. The Phonathon gives them good experience to improve their communication skills."

"The students get a feel for what it is like in the job world, good or bad," Cameron said. "There are times when the outlook in a specific field isn't good, so students may decide to change their area of specialization if the future doesn't seem as promising as they had hoped."

The Phonathon crews will use more than 50 phones for the week-long calling, then will utilize the University Foundation's phone center for follow-up calls to alumni. Students will call between 6 p.m. and 11 p.m. Central Time.

"I would like to encourage alumni to be available to receive phone calls sometime during the week," Tiltrum said. "If they will be gone then, they can contribute through the mailer they receive before the event."

The Phonathon is organized by a committee that includes faculty from each department in the College of Engineering and students.



*Money raised through alumni during the Phonathon is used to purchase computer materials and lab equipment and to fund projects that will benefit the College of Engineering and its students.*



# Students intern with Zytec

*"I gained a lot of confidence. Through the value analysis division, I was able to make a presentation to senior staff and lead several meetings."*  
Mike Stoos

Brent Carey and Mike Stoos spent their summer in the "real world" working at Zytec Corp. in Redwood Falls, Minn.

The power supply manufacturer, headquartered in Eden Prairie, Minn., is headed by Ronald Schmidt, a 1963 SDSU electrical engineering graduate. Zytec has won several awards and been named one of the 10 best manufacturing facilities in the nation.

Zytec hires 18 interns per year. "From our standpoint, we give them real work to do so it benefits us. They get real work experience so it's a win/win situation," Schmidt said. The company hires some of the interns for full-time employment, depending on workload needs.

Carey, a senior electrical engineering major from Windom, Minn., worked with several lines of products and with project engineers to do problem analysis and implement solutions. Stoos, a senior electrical engineering/engineering physics major from Akron, Iowa, worked in value analysis and other divisions, as needed.

Internships have several benefits, Carey said. "You make contacts out in the field. You get to see if this is a career

you really want to pursue. I didn't know what engineering was going to be like and after I worked the first position, I just loved it."

"I gained a lot of confidence," Stoos said. "Through the value analysis division, I was able to make a presentation to senior staff and lead several meetings."

Lou Beauzay, 1962 SDSU engineering physics graduate, a supervisor for both Carey and Stoos, said, "They've had the coursework and communications skills needed to do the job. They did as well as any co-op students (interns) we've had."

Businesses interested in an internship program may contact the SDSU College of Engineering at (605) 688-4161 or the Career and Academic Planning Center at (605) 688-415.

## Engineering students program Shanghai message center

SDSU engineering students Katie Chen and Fen Zhang Lin programmed the Chinese characters into a color-coded message center in China. The students were hired in September by Al Kurtenbach, president of Daktronics in Brookings, a world leader in the design and manufacture of electronic scoring, timing and display systems.

The message center displays advertising above the Shanghai Superfines Commercial Building, which contains a department store. The 72 x 208-foot lamp matrix display shows advertising in up to 16 colors and communicates in Chinese and English. Chen and Zhang Lin helped give the Venus 6000 control system the capacity



to enter and display more than 13,000 Chinese characters, with the capacity to create 5,000 additional characters.

## Computer science major competes for Miss Rodeo America title

SDSU freshman computer science major Cheyenne Vig of Mud Butte competed for the Miss Rodeo America title in Las Vegas, Nev., in early December.

Vig earned the right to vie for the national crown by being named Miss Rodeo South Dakota during the state pageant in Belle Fourche in July. She competed in the areas of horsemanship, personality and appearance.

Although she didn't place in the national contest, Vig said the experience was worthwhile. "Las Vegas was great; I learned a lot," she said. "Just being able to be there was a special occasion."

In her position, Vig travels across the state to promote and educate people about rodeo. She will retain the state title until the new queen is crowned in July and will be part of the Jackrabbit Stampede at SDSU in May.

## Three students awarded prestigious Daktronics trainee honor

A South Dakota high-tech corporation will send three South Dakota State University students to graduate school as a way to keep itself at the cutting edge of industry.

Daktronics, Inc. of Brookings has announced that Brian Piersel and Jim Barnett, both of Brookings, and Darrel Koupal of Armour have been chosen for the company's Graduate Trainee award. Each will be seeking masters degrees in electrical engineering or computer science from SDSU.

Through the Graduate Trainee award, Daktronics will provide the recipients with tuition and a book allowance. The students will also have

the opportunity to work 20 hours a week during the school year and full time during the summer. In exchange, the recipients must complete their graduate work in two years, maintain a 3.0 Grade Point Average and choose the thesis option upon competing graduate school.

"Daktronics has an interest in education, and we want to encourage talented engineers to pursue masters degrees in order to promote advanced research and development," said Jim Morgan, vice president of engineering at Daktronics.

Past Graduate Trainee award recipients include Layne Mostad, Glow Cube product manager, and Seth Hansen, an applications engineer and project manager for the Lillehammer Olympics project.

This year's recipients are already receiving hands-on engineering training. Piersel is involved in the design of hardware and software for various projects. Barnett is involved with the hardware design of a new controller. Koupal has been working on software design in connection with the PGA TOUR.



*The 1992 recipients of the Graduate Trainee program from Daktronics are, left to right: Brian Piersel, Darrel Koupal and Jim Barnett.*

## Westegaard, Enga receive East River Electric scholarships

Scott Westegaard and Brian Enga, electrical engineering students at SDSU, received scholarships from the V.T. Hanlon Memorial Scholarship Fund during the East River Electric Power Cooperative annual scholarship

recognition dinner in Madison this fall. The scholarship was established in 1969 in memory of Virgil T. Hanlon, the first general manager of East River.

Westegaard, a senior, is the son of Rodney and Carol Westegaard of Hurley. Enga, a junior, is the son of Mr. and Mrs. Wallace Enga of Valley Springs.

*Wayne Knabach, far right, professor of electrical engineering, congratulates Scott Westegaard, left, and Brian Enga at the East River Electric annual scholarship recognition dinner.*



## First All- Engineering Volleyball Tourney a success

Eighteen teams with 115 people participated in the first All-Engineering Volleyball Tournament Dec. 5.

The event organizer, Lionel Dayton of Aberdeen, who is also a student senator, said he was pleased with the turnout. The junior civil engineering major said he thought the tournament would be a great chance for students to meet outside of the classroom.

"It brought together all departments of engineering to the same spot. There were people at the tournament that you've never seen before, so you could talk to them and meet them. That's what I wanted."

# Focus

## on South Dakota State University

### 40-year search for rare typesetter ends at South Dakota State

A museum owner's 40-year search for a rare typesetting machine ended at South Dakota State University in Brookings Dec. 12.

Ernest Lindner has been looking for a Linotype Jr. since he began assembling his collection for the International Printing Museum in Buena Park, Calif., four decades ago. When he discovered that SDSU had the machine and the University agreed to loan it to the museum for 15 years, Lindner and Mark Barbour, museum director and curator, set off for South Dakota to meet with SDSU officials and collect their find.

Though the trip was grueling, it proved more than worthwhile. Along with the Linotype Jr., Lindner and Barbour

hauled home a Unitype printer, a collection of old, historical printing books and a handful of new memories.

The Linotype Jr. was created for the Linotype Company by John Rogers in 1899 to compete with the Unitype, a machine that sold for half the price of Linotypes at the time.

"It simply functioned to compete and remove a competitor off the market," Barbour said. "It successfully beat the Unitype, or the Simplex as it was known then, pushing them off the market. By 1915 they had gone under."

Very few Unitypes exist today, Barbour said, because Linotype salesmen took them in in trade, then had them destroyed.

The machine will be restored while on



display in California. No plans have been made for after the 15-year loan period expires.

*Pictured in the SDSU Printing Laboratory Dec. 12 with the rare Linotype Jr. typesetting machine are, left to right: Dick Lee, head of the SDSU Journalism Department; Mark Barbour, director and curator of the International Printing Museum in Buena Park, Calif.; Ernest Lindner, museum owner; Jerry Abel, wife of the late Oscar Abel who managed the Printing Laboratory and was an expert on the Linotype; and Dennis Lundgren, director of the Printing Laboratory.*

### Professors research Native American learning styles

Lois Widvey, professor of education at SDSU, and Lowell Amiotte, assistant professor of education, are studying the learning styles of Native American students to help teachers develop more effective teaching methods.

People learn in different ways, Widvey said: by hearing (auditory), by seeing (visual) and by doing (hands on).

The testing involves about 900 elementary students in Todd and Shannon counties. The Dunn Learning Styles Inventory is being used as a test instrument. After results are tabulated, Widvey and Amiotte will develop a profile of how the students learn. They will also conduct workshops with the teachers involved to demonstrate ways to interpret different learning styles and accommodate them in their teaching methods.

### College of Nursing graduates first FNP's

The SDSU College of Nursing graduated its first four Family Nurse Practitioners Dec. 12 and interest in the program is growing.

Family Nurse Practitioners perform a vital role in providing health care to residents of rural states like South Dakota. They are mid-level practitioners whose role falls between that of a Registered Nurse and a physician. FNP's assess health status, diagnose problems and treat common and chronic illnesses and injuries. They provide initial treatment and diagnosis and prescribe drugs under

the authorization of a physician. They also focus on health education, wellness and lifestyle promotion.

The four SDSU graduates "will make a significant impact," said Scott Graff, manager of the Sioux Falls branch of the South Dakota Office of Rural Health. "It's significant whenever you fill that many positions. We see Nurse Practitioners as one additional, critical element in the rural health delivery system and the use of interdisciplinary teams is critical to access."



## Reproduction research to be used internationally

**A** laboratory test created at SDSU by biochemistry professor Don Evenson and colleagues is being used in national and international studies of male reproduction.

In New York and California, Evenson further developed the sperm chromatin structure assay on other types of sophisticated instrumentation similar to that at SDSU, but different enough to require development of hardware and computer software components. The assay allows researchers to look at the chromosome structure in sperm, which is very important both in fertility and in determining the toxic effects of the environment.

Factors involved in male fertility and effects of toxins that are routinely measured in semen samples include number of sperm, their movement and their shape. However, Evenson said recent studies have shown these conditions can

change over a short period of time in an individual due to several factors.

"This test we have developed has two important features," Evenson said. "First, the sperm chromatin structure is a more constant feature over time than other factors currently measured. Second, it is sensitive to changes in response to a toxic environment. It can detect abnormal changes in sperm days ahead of other classical analyses."

The assay has gained international attention through publication in journals and seminar speaking engagements by Evenson in more than a dozen countries. He spent much of September, on invitation from the Nordic Countries Academy of Sciences, lecturing and helping set up laboratories to conduct the assay. Evenson spent the calendar year 1991 at the National Hospital in Oslo, Norway, where he introduced this assay in the infertility clinic.

## South Dakota State to host NCAA wrestling tourney

SDSU will host the 1993 NCAA Division II Wrestling Tournament March 5 and 6 at Frost Arena.

"It's always a challenge to put on a national tournament of any kind," said Fred Oien, director of Health, Physical Education and Recreation, "but anytime we can host a national event in any sport, we feel it's great exposure for South Dakota State and Brookings."

Adult tickets cost \$6 per session and \$15 for all four sessions. Student tickets cost \$4 per session and \$10 for all sessions. Tickets can be purchased at the Athletic Ticket Office in the Health, Physical Education and Recreation (HPER) Center or by calling 688-5422.

## Athletes honored with top awards

Nicole Scherr was named to the top ten for the 1992 NCAA "Woman of the Year." The Cold Springs, Minn., native was honored for her achievements in cross country including being named All-American five times.

The 1992 men's basketball team, which appeared in the Elite Eight Tournament (nationals), was named Collegiate Men's Team of the Year by the South Dakota Sports Writers Association.

## Focus News Shorts

### F.O. Butler awards

Recognized as F.O. Butler Outstanding Faculty during graduation Dec. 12 were: Robert Durland, professor of agricultural engineering, Excellence in Extension; James Rice, associate professor of chemistry, Excellence in Research; Bruce Brandt, professor of English, Excellence in Scholarship; Teresa Hein, physics instructor, and Fred Cholick, professor and head of Plant Science, Excellence in Service to Students and Academic Advising.

### Professor researches teenage satisfaction

Diane Ostrander, assistant professor in human development, child and family studies, did a study that measured how satisfied teens are with life. The results were published in the national journal *Psychology Reports*.

### Research grant awarded for global warming study

The U.S. Environmental Protection Agency has awarded a \$358,000 grant to

fund a three-year study on "Global Warming and Prairie Wetlands: Potential Consequences for Waterfowl Habitat."

Project director is Dr. W. Carter Johnson, professor and head of the SDSU Horticulture, Forestry, Landscape and Parks Department. A co-investigator is Dr. Lester Flake, professor of Wildlife and Fisheries Sciences at SDSU.



*The new Sheep Research and Teaching Center was dedicated Jan. 16 at the SDSU Sheep Research Unit north of Brookings. The dedication of the \$570,000 building was part of the Lamb Bonanza activities. A lamb sampler, lamb pelt auction and a wool style show were included in the half-time festivities during the men's and women's basketball games against the University of South Dakota in Frost Arena on the SDSU campus.*



# New advisory council to help keep South Dakota workers safe, healthy

A new advisory council has been formed to help SDSU Engineering Extension keep doing its job of keeping South Dakota a safe place to work.

Engineering Extension's Occupational Health and Safety Consultation Program is available to any South Dakota business. At no charge, experienced professional safety and industrial hygiene consultants conduct on-site visits to identify safety and health hazards in the workplace and recommend ways to reduce or eliminate them. They present seminars to teach employers how to comply with OSHA standards.

The program is funded through the U.S. Department of Labor, which pays 90 percent, and Engineering Extension, which pays 10 percent. But to continue doing it right, more funding sources are needed.

"The Engineering Extension Advisory Council," Ceglian said, "is a support group that will help us obtain funding and allow us to continue the

types of services that took 11 years to develop. The council members are the users of this program and they're the best proponents that we have because they realize what we've done for them. We've kept the wolf from the door as far as OSHA fines. The most important thing is keeping their employees healthy and safe."

The program serves well over 200 different employers a year, including lumber yards, hardware stores, auto repair shops, steel makers, all types of manufacturers, retail stores, meat packers, construction — "you name it," Ceglian said. "Printing is another industry we do. We've done half the newspapers in the state."

Engineering Extension consultants look at anything and everything related to worker safety and health. They check out the ventilation and electrical systems. They take air samples. They test for chemicals, asbestos and noise. They watch for situations that could lead to carpal tunnel syndrome.

"We do it without fining or citations," Ceglian said. "We do it as consultants."

Their first "client" was a bank in 1981. "People were fainting in this bank and they didn't know why," Ceglian said. "They were experiencing dizziness, headaches." The consultants

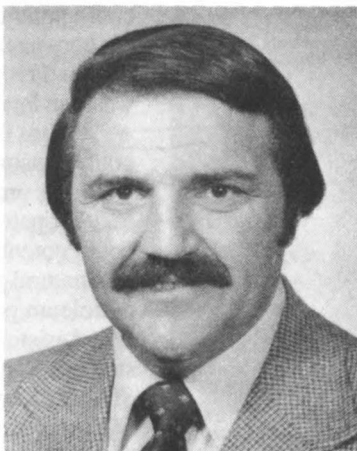
discovered the problem in the air intake for the bank's heating system. Located in the parking lot, it was sucking car fumes into the building.

As industry becomes increasingly vital to the livelihood of South Dakota, the Occupational Health and Safety Consultation Program becomes increasingly vital to industry.

"The future of this state is industry, employment," Ceglian

said. "We'll never grow without it. We need jobs out there and this is the way to make those jobs safe so employers don't have to pay extra for workman's comp."

Ceglian credits the success of the program to a competent, devoted staff.



Jim Ceglian

"It's the capabilities and the desire of our consultants that make this program successful," he said. "They're very, very motivated to help with safety in the workplace. We've all been very, very dedicated to this program and it's paid off."

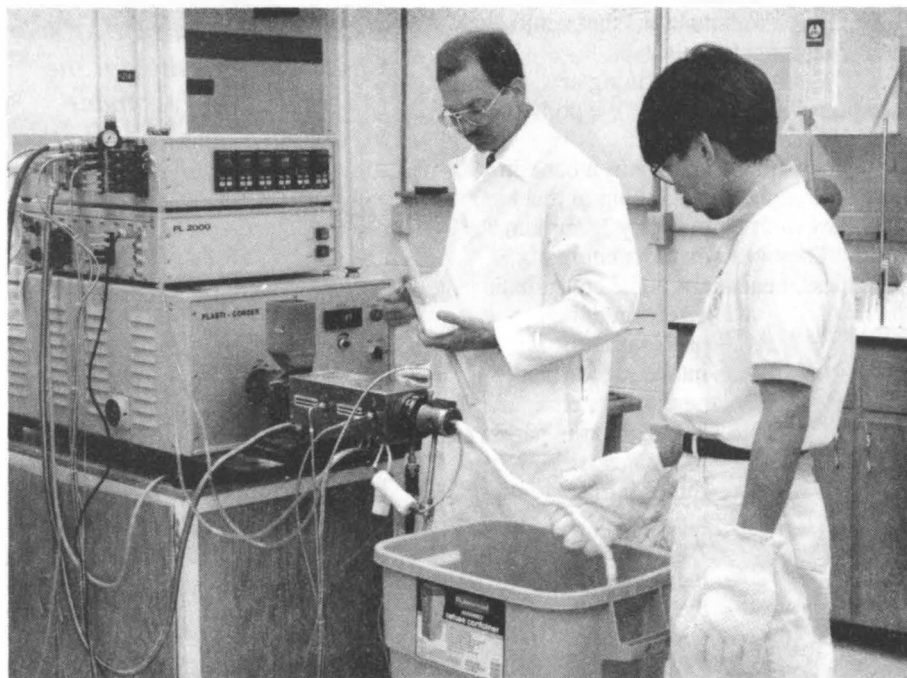
## Council includes 7 men, 1 woman

*The Engineering Extension Advisory Council, which met for the first time Dec. 7, is made up of seven men and one woman from across South Dakota.*

*Council members are:*  
Tom Devine of Watertown, Benchmark Foam, Inc.;  
Mary-Susan Jaspers of Webster, Dakotah, Inc.;  
Charles Lein of Rapid City, Landstrom's Original Black Hills Gold Creations;  
Jack Marshman of Sioux Falls, Sioux Falls Construction;  
Phil Mitzel of Aberdeen, Hub City, Inc.;  
Leo Reynolds of Sioux Falls, Electronic Systems, Inc.;  
Lois Sebert of Mitchell, Dakota Pump;  
and Marlin Van Den Eide of Sioux Falls, AGC of South Dakota.

# Ag engineering part of corn/plastic research

*If this material is used to replace current Styrofoam packaging, it could potentially increase the demand for corn as much as 30 million bushels a year and reduce the volume of plastic waste in landfills*



*Agricultural engineering assistant professor Jim Julson and graduate student Rahamad Djakaria are mixing corn flour and polystyrene through an extruder to make environmentally-friendly foam plastic which could be used to replace Styrofoam packing peanuts or other insulated packing materials.*

**T**he same technology that gives us Cheetos cheese puffs is being used to create an environmentally-friendly, corn-based foam plastic.

Agricultural engineering assistant professor Jim Julson is working with Padu Krishnan, assistant professor of nutrition and food science, and Tom West, associate professor of chemistry, to develop insulating and packaging materials with corn-based products.

In the study, Julson and his associates mix corn flour and

polystyrene, a plastic used to make Styrofoam. The mixture is poured into an extruder which heats it to 350 to 375 degrees. The mixture comes out as melted material, but, as the water vaporizes, it expands to form a cylinder about a half inch thick.

"We're playing with different formulas to see how much expansion we can get," Julson said. "We want as much as possible so the material will be light. Its main uses will be to replace the packaging peanuts currently being used or for insulated packaging material."

The corn-based foam is denser than polystyrene, but it has nearly the same strength and insulating value. The advantage of the corn product is that it can degrade in the environment.

In degradation studies conducted by Julson's group, the corn mixture was buried in soil, placed on the soil surface, put in an aerobic digester in the waste treatment plant and placed in an area lake. In all cases, the material had lost 70 percent of its compressive strength by the fourth week; in most cases, the compressive strength could not even be tested because such a small amount of the material could be found. With regular polystyrene, breakdown is estimated to take hundreds of years.

Julson said if this material is used to replace current Styrofoam packaging, it could potentially increase the demand for corn as much as 30 million bushels a year and reduce the volume of plastic waste in landfills.

"Corn utilization is the ultimate goal," Julson said. "The things we learn from this project may be used to apply to other petroleum-based substances. We could potentially find other applications of a natural polymer to replace a petroleum polymer."

Assisting with the project are SDSU students Sampath Narayanan, Shiramani Sharma, Steve Moeller and Rahamad Djakaria.

Julson said a commercial producer hasn't been located yet, but a Minneapolis, Minn., plant will participate in a pilot study this spring.

The project is funded by the South Dakota Corn Utilization Council and the Northern Regional Agriculture Utilization Consortium.

## Engineering, Pharmacy join forces for workshop

The workshop "Advising in the Sciences" was held in November on the SDSU campus for engineering and pharmacy faculty.

Sponsored by the Bush Foundation Faculty Development Grant, the workshop was organized by a committee co-chaired by Don Froehlich, professor and head of mechanical engineering, Gary Van Riper, assistant professor of pharmaceutical sciences and coordinator of pre-pharmacy admissions, and Joye Ann Billow,

professor of pharmaceutical sciences.

The workshop, which dealt with advising women, minorities and nontraditional students and keeping them within each discipline, was presented by Judy Aull, senior academic advisor for the Department of Computer Science and Engineering at Auburn University in Alabama. Aull has extensively researched recruiting and retaining women and minorities in engineering, science and mathematics.

Aull's presentation strategies dealt with building a workforce for the year 2000. She presented effective advising techniques for keeping women and minorities within the engineering, science and mathematics programs.

Van Riper said that workshop goals were to identify methods to better advise nontraditional students and to improve recruiting and retaining of Native American students.

"Women are not a minority in our program," Van Riper said. "We are,

however, seeing the greatest growth in the area of nontraditional students."

Froehlich said that retaining women is a growing problem for the College of Engineering.

"A driving issue in our College is what has occurred with the women in our discipline," Froehlich said. "We have seen a change. There are less numbers of women in our program today. They make up less than 10 percent today. We know that they are some of our best students and we need to bring this issue to the forefront. We need to be aware of what is occurring and what can be done about it."

Mary Perpich, director of Bush Faculty Development, said, "Collaboration in this event between the two colleges adds strength to the recognition that a gender and minority balance needs to occur in pharmacy and engineering."

## Grant boosts computer power of SDSU engineering

A \$500 grant from the South Dakota Electrical Council (SDEC) has boosted the computer power of electrical engineering students at SDSU.

Wayne Knabach, the electrical engineering professor at SDSU who wrote the grant proposal, said the personal computer and related equipment greatly enhances the capabilities of SDSU electrical engineering students studying electric power systems. The new equipment was jointly made possible by the SDEC grant and from financial support by the Center for Power System Studies.

"Most of the courses pertaining to electrical power systems within the department require computer analysis as part of their studies," Knabach said. "We want the students to be familiar with some of the software and software analysis.

"Before this computer was available, power systems students had to share time and computer memory on other computers, both within the department and on the campus. This gives them one specially dedicated to their purpose."

Knabach has represented SDSU as a member of the South Dakota Electrical Council Board of Directors since 1985. SDEC members include individuals, corporations and other organizations which do business in South Dakota pertaining to the manufacture, sale or distribution of electrical appliances, devices, apparatus, supplies, energy, facilities or service.

The SDEC regularly supports industry education programs. The \$500 award to the SDSU Department of Electrical Engineering is the latest of a series of annual financial awards which have been

used to support departmental equipment and instructional media needs within the department.

The purpose of the SDEC is to protect, promote, foster, train and advance the interest of the electric industry in the State.



*On behalf of the South Dakota Electrical Council, Wayne Knabach, a member of the SDEC Board of Directors, presents a \$500 grant award to Virgil Ellerbruch, professor and head of the Department of Electrical Engineering at SDSU. The grant money helped pay for a personal computer and related equipment for electrical engineering students studying electric power systems.*

# Physics instructor Teresa Hein takes faculty improvement leave



*"I am going to try to come up with units to design material that can be taught several ways, whether it is for auditory, visual or hands-on learners."*

*Teresa Hein*

Students who do not seem interested in science or math classes may change their minds when they are allowed to learn in different ways.

This is what SDSU physics instructor Teresa Hein wants to find out when she starts her research project about student learning styles. Hein is on a faculty improvement leave for the 1992-93 school year to work on her doctorate in science education at Kansas State University.

Currently, she is doing classwork for her degree. But starting next fall, she will begin her learning styles research project. People learn primarily in three ways: by hearing, by seeing and by doing. Hein plans to use cutting-edge technology called Digital Video Imaging (DVI) to assess the learning styles of high school students on one of the Indian reservation schools in South Dakota.

Currently, two faculty members from the SDSU College of Education and Counseling are conducting learning style tests on 900 Native American elementary students in Todd and Shannon counties. Lois Widvey and Lowell Amiotte will use the test results to create a profile on how the students learn so teachers can develop more effective teaching methods.

"Lois and Lowell have been doing preliminary research on Native American students learning styles," Hein said. "My work will add to and complement theirs."

In Hein's project, she will use computer technology to simulate an experiment in modern physics. The students can observe the experiment and stop it at any time to understand what is happening.

"The computer can be used to enhance the learning style strength of the student," Hein said. "I am going to try to come up with units to design material that can be taught several ways, whether it is for auditory, visual or hands-on learners."

Hein said her advisor at Kansas State, physics professor Dean Zollman, is excited about the project because it will give him a chance to review the

field test of the DVI equipment. Zollman's work on DVI is funded by the National Science Foundation.

Hein said she is excited about the project because the results will help South Dakota students and teachers, particularly in technology use and in learning styles.

The preliminary design work for the project will be done this summer. Hein will return to teaching at SDSU this fall.

## *Hein named F.O. Butler Outstanding Faculty*

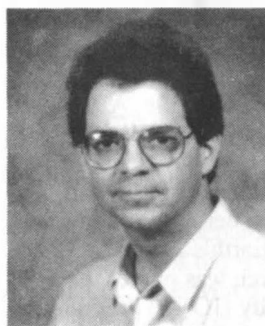
*Physics instructor Teresa Hein was one of five South Dakota State University teachers who were recognized as F.O. Butler Outstanding Faculty during the Dec. 12 graduation ceremony.*

*Hein was awarded for Excellence in Service to Students and Academic Advising. She has taught the Introduction to Engineers course which requires her to individually know and work with 300 students. She also advised the Engineering Phonathon, the Society of Physics Students and the Multicultural Organization and organized the Friends of Paulos Committee. Hein is working on her doctorate in curriculum and instruction at Kansas State University and is originally from Brookings.*

*The awards, made possible by the F.O. Butler Foundation, facilitate recognition and give a \$500 monetary reward to outstanding faculty at SDSU.*



# Miller expands information to multi-level dimensions



**J**ohn Jay Miller, assistant professor in graphic design at SDSU, spent most of Summer '92 working at the EROS Data Center near Sioux Falls,

expanding information to multi-level dimensions.

Miller has worked extensively in the graphic design field as a computer animator, designer and programmer. His work at EROS was made possible

through a summer faculty fellowship awarded by the South Dakota Space Grant Consortium. The Consortium, administered at SDSU by the Engineering and Environmental Research Center in the College of Engineering, was formed between SDSU, the South Dakota School of Mines and Technology and EROS to enhance aerospace capabilities within South Dakota and create links between business, government and higher education.

"The goal is to facilitate and encourage collaboration between people from EROS and SDSU and the School of Mines," Miller said, "and perhaps develop opportunities for graduate students and, in general, to keep the links open."

Most of Miller's work at EROS involved putting the information from a Senegal report into what he calls "hyper media." The report was written by EROS International Branch officials at the request of the U.S. government. The report, which included an abundance of maps and technical jargon, projected what would happen to the African country using various scenarios on population growth. Miller's job was to

give that information multi-informational dimensions.

EROS is currently working on making its own Compact Disks. Miller said he'd like to see the Senegal report put on CD and utilize a touch screen. "That's the direction I'd like to go," he said. "My work at EROS gave me a better understanding of non-linear information dissemination and non-linear information presentations."

Expanded dissemination of information could be beneficially applied at SDSU, Miller said. "There isn't an area on campus that doesn't relate to that (software)," he said.

For example, catalog inventory at the South Dakota Art Museum could include a picture of a headdress, interviews with people relating the history of the headdress and moving pictures of costumed people dancing.

"That's where I think things should be heading," Miller said, "multi-level information. It isn't just posters and letterheads. The nature of information dissemination is changing. We have to have these models to show our students."

## Math Department receives math award affiliation

**T**he SDSU Math Department has been awarded an affiliation to the National Council of Teaching of Mathematics (NCTM).

The SDSU charter affiliate, the Student Council of Teachers of Mathematics, consists of math education majors and faculty advisers who want to learn or perfect their teaching skills.

Each state, large university campuses and large cities have their own NCTM charter. Professor Jan Vandever said that it is unusual SDSU was granted this affiliation because SDSU is such a small university. Vandever, professor of mathematics and statistics, is co-founder of the SDSU math affiliation.

Each charter is able to vote on NCTM standards, which tell teachers how to teach math effectively.

"Our one vote is equal to the one vote that all teachers who belong to the South Dakota Council have," Vandever said. "By SDSU gaining this affiliate membership, we are doubling our voting

power in South Dakota, which will be good for all of our teachers."

Besides being a direct contact with the national organization, the members of the group meet about once a month to share learning activities with their peers. The presenters have either learned about the activities in their classes or have found them in NCTM journals or other materials.

"Members of the group and advisers take turns presenting activities to other members," said Alan Bierschbach, president of the chapter. "We explain activities that you would be able to use in the classroom. For example, we show games that you could use to better teach algebra or geometry to high school students." Bierschbach is a senior math education and history major from Webster.

In November nine of the members attended the regional NCTM meeting in Minneapolis, Minn. Sessions dealt with different teaching techniques, activities

to perfect teaching skills and methods students respond to best.

"It is important for future teachers to prepare for situations in the classroom because it helps them discover new teaching techniques," Bierschbach said.

Vandever worked with students Kim Johnson of Huron and Roxanne Harms of Milbank to create a charter proposal for the SDSU affiliation. The proposal contained a constitution and by-laws of how the SDSU charter would be organized. A year later, after several revisions, the proposal was accepted by the national organization. Johnson, Harms and Vandever traveled to Nashville, Tenn., to accept the charter in April at the national NCTM meeting.

"This affiliation gives students a good look at the opportunities that they'll have available to them and to know ahead of time what their chosen profession will offer them," Vandever said. "And it gives faculty the chance to go beyond the classroom."

## Faculty notes

### Swiden elected to national industrial extension board

**LaDell Swiden**, director of South Dakota State University's University/Industry Technology Service (UITS), was elected to the American Industrial Extension Alliance Board of Directors.

The alliance is an organization of industrial extension and related programs that focus on providing technology-based and associated managerial assistance to private sector industrial enterprises.

The goals of the Alliance are to: improve competitiveness of private manufacturing industry; promote

interaction among industrial extension programs; develop new industrial extension delivery mechanisms; and develop standards and practices to encourage improvement of all members. Swiden will serve on the organizational relationships committee and the National Institute of Standards and Technology (NIST) relations committee. Through this directorship position, Swiden said he hopes to bring the goals of the Alliance to South Dakota technology transfer agents.

The mission of UITS is to link university resources to industry, business and government to solve technological problems and enhance economic development in South Dakota. For more information, contact Swiden at (605) 688-4184.

**Dr. Warren Hein** of the SDSU Physics Department was invited to be a member of the science writing/development team by the South Dakota National Science Foundation State Systemic Initiative.

**Stephen Schiller**, assistant professor of physics, spent 10 weeks this summer working at the EROS Data Center near Sioux Falls and at the Marshall Space Flight Center in Huntsville, Ala., researching the development of an algorithm and a portable ground-based atmospheric monitoring system for correcting atmospheric effects in remote imagery of the Earth's surface. Schiller's research was part of the Joint NASA/University (JOVE) program to promote faculty development in aerospace sciences.

## New Faculty

**Dr. David Galipeau**, assistant professor of electrical engineering. Galipeau earned a bachelor of science degree from the University of Rhode Island and a master's and doctorate from the University of Maine. Before coming to SDSU, he was with the University of Maine in Orono. He and his wife, Patricia, have three children.

**Dr. John O'Brien**, assistant professor of physics. O'Brien earned a bachelor of science degree from the National University of Ireland in 1970 and a doctorate from the University of Pittsburgh in 1976. He specializes in experimental nuclear physics, work in high energy atomic physics, industrial research in exploration geophysics and has eight years experience as a practicing geophysicist in the oil industry. He was senior geophysicist with BP Exploration in Houston, Texas. He and his wife, Mary Beth, have two children.

**Christine L. Larson**, instructor in mathematics. Larson earned a bachelor of arts degree from Augustana College in 1985 and a master's degree from Montana State University in 1987. She

is currently completing her dissertation for a doctorate in math education at Montana State University. She will teach a variety of mathematics courses and will work with math majors planning secondary teaching careers.

**Craig Peters**, lecturer in Electronics Engineering Technology. Peters earned a bachelor of science degree in technology from SDSU in 1990. He is currently working on a master's in industrial management at SDSU. He taught for two years at East Central Multi-District in Brookings and previously served as customer service technician at Daktronics, Inc.

**Dr. Mohsen Sarfarazi**, associate professor of mechanical engineering. Sarfarazi earned a bachelor of science degree from the University of Sussex, England, in 1978, a master of science degree from George Washington University in 1981 and a Ph.D. from the University of Illinois at Chicago in 1987. He specializes in solid mechanics, materials and structures. He comes to SDSU from Georgia Tech, Atlanta, Ga. He and his wife, Faith, have one daughter.

**Dr. Kevin TeBeest**, assistant professor in physics. TeBeest earned a bachelor of science degree in mathematics from SDSU in 1981, a master of science in applied mathematics from the University of Nebraska at Lincoln in 1986 and a Ph.D. in mechanical engineering from the University of Nebraska in 1992. He specializes in computational fluid dynamics with an emphasis in finite element, weighted residual, asymptotic, perturbation and tau spectral methods. He has a wife, Vickie.

**Dr. John Tracy**, assistant professor of civil engineering. Tracy earned a bachelor of science degree from Colorado State University at Fort Collins in 1980 and a master of science in 1986 and a doctorate in 1989 from the University of California at Davis. He specializes in ground water modeling. He was formerly with Kansas State University at Manhattan as an assistant professor of civil engineering, Water Resources Engineering Program. He has a wife, Denise.

## Engineering graduates form alumni chapters in Far East

**F**inding the South Dakota State University logo in South Dakota is not unusual, but in Malaysia?

Why not?

During an SDSU Engineering Department meeting last summer, M. Nadim Hassoun, civil engineering professor, Dwayne Rollag, head of the civil engineering department, and Chad Kono, director of the Alumni Association, discovered that Kuala Lumpur, Malaysia, is a "hot spot" for SDSU engineering graduates.

Of the 115 SDSU alumni living in Malaysia, 105 graduated from the SDSU College of Engineering, making it a perfect location for an alumni chapter.

Hassoun and his wife followed up on the idea when they visited Malaysia and other Far Eastern countries last summer. During their four-day stop at

Kuala Lumpur in August 1992, Hassoun met with 16 other SDSU engineering graduates during a dinner meeting.

About 14 of the graduates who attended were civil engineering majors. Hassoun said the group was enthusiastic about forming a new alumni chapter in Malaysia and immediately formed a committee to follow up on the idea.

"I explained to our graduates the importance of forming an alumni chapter in Kuala Lumpur," Hassoun said, "indicating the benefits from establishing an alumni chapter by keeping ties with SDSU and ties between all the graduates in Malaysia."

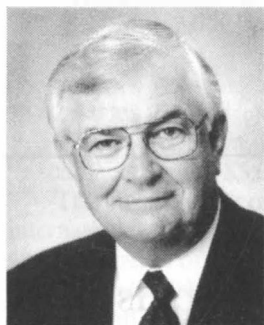
Mr. Lim Ah Ho will chair the committee. The group plans to contact the Malaysian SDSU alumni to proceed with plans for establishing an alumni chapter.



*Meeting with SDSU professor Dr. Carl Edeburn to discuss establishing an SDSU alumni chapter in Korea are Dr. Yong-Kook Kim; Moo-Ryong Park; Mrs. Park; Yeoung-Dae Kwon; Mrs. Kwon; Edeburn; Dr. Chang-Won Kung; Dr. Kee-Han Nahm; Mrs. Rhee; and Jae-Hyun Rhee. In front are children of Mr. and Mrs. Park.*

Plans are also in motion to establish an alumni chapter in Korea. Carl Edeburn, SDSU professor in the College of Education and Counseling, visited 15 SDSU graduates in Korea this fall. Within this group, 10 are engineering graduates, four had agriculture doctorates and one earned a bachelor's degree in economics.

## Engineering graduate named distinguished 1992 alumnus



**F**rom many small towns come big people who accomplish great tasks. James Edwards of Brookings is one of those select few.

Edwards, a 1951 graduate of Colton High School, was honored for his professional achievements by being named one of the seven South Dakota State University distinguished alumni during the Oct. 2 Hobo Day homecoming festivities. "It was very emotional," Edwards said of receiving the 31st Distinguished

Alumni Award. "I've always felt the award was a very, very high honor and I'd never put myself in that position.

"I'm very honored."

Edwards received his bachelor of science degree in civil engineering from SDSU in 1955. He has worked for the Brookings architectural firm Banner and Associates for more than 32 years. He is currently manager and chairman of the board at Banner and oversees the local office. Banner is the design consultant for the new \$7.2 million residence hall project at SDSU and for installation of a new elevator in Larson Commons to provide accessibility to the food service area.

"I really enjoyed school at SDSU and I never wanted to go to another school," Edwards said. "I always felt I had a very good education and have

never been sorry I went to SDSU."

Edwards' dedication to SDSU shows. He remains active in University activities by serving as a member of the SDSU Athletic Department Advisory board and the SDSU Foundation committee. He is also a charter member of the Stan Marshall Golf Classic committee.

Edwards was presented his award during the 31st annual Distinguished Alumni Awards dinner at the Brookings Holiday Inn Convention Center on Hobo Day.

"Each year we want to recognize the stars of our institution," said Chad Kono, executive director of the SDSU Alumni Association. "A great way to do so is by honoring our distinguished alumni for their personal achievements during a banquet."

# Alumni notes.

Stacey A. Wahlstrom, '86, has a new baby girl, Erika Elizabeth, born June 25, 1992. Stacey is enjoying fatherhood and is working as a design engineer at Ceridian (formerly Control Data Corp.) in Bloomington, Minn. He and his wife, Efie, recently built a home in Lakeville, Minn., where they are enjoying their new family.

John M. Hanson, MSCE '57, was elected to the National Academy of

Engineering this year in recognition of his contributions to the investigation of structural damage, deterioration and failures. Hanson earned his BS at SDSU and his Ph.D. at Lehigh. The president of Wiss, Janney, Elstner Associates Inc. in Northbrook, Ill., he received Illinois State University's Professional Achievement Citation in Engineering in 1981.

Dr. Carol Joan (Gilbertson) Lehtola,

BSAE '73, received a Ph.D. in Agricultural and Biosystems Engineering from Iowa State University in August 1992. She is officer of the Iowa Section of American Society of Agricultural Engineers (ASAE) and officer of the Midcentral Region of ASAE, which covers four states. Lehtola recently published two journal articles. She has been recognized for teaching excellence at the Iowa State University Department of Agricultural Engineering. She is working for the University of Iowa at the Institute of Agricultural Medicine in Agricultural Safety.

## We want to hear from you!

We want to hear from you! Have you moved, accepted a new position, gotten married, given talks in your community, received an advanced degree or had an addition to your family? Everyone at the College of Engineering and your classmates want to know what has been happening with you.

Name \_\_\_\_\_ Year Graduated \_\_\_\_\_

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City/State/Zip \_\_\_\_\_

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Brookings, SD 57007

In recognition of his service in "nearly every conceivable capacity," the South Dakota Water and Wastewater Association (SDWWA) dedicated its 1992 program brochure to Dr. James N. Dornbush. An honorary member of SDWWA, Dornbush earned BS and MS degrees in civil engineering from SDSU and the University of Minnesota and his doctorate from Washington University. Although he worked for short periods for the U.S. Army, the Minnesota Department of Health and the South Dakota Department of Health, Dornbush established his reputation as a professor of civil engineering at SDSU. Beginning at the rank of instructor in 1949, he is now Professor Emeritus at SDSU, having retired in 1990.

## Correction to Summer Impulse

In the Summer 1992 Impulse, the wrong John Miller was pictured with the story about the Space Grant Consortium summer faculty fellowship at EROS Data Center. The photograph was of John E. Miller, a professor in the SDSU History Department. It should have been a photo of John Jay Miller, an assistant professor in graphic design at SDSU.



## BENEFACTORS (Gifts of \$1,000 or more)



*Interstates Electric officials present a check during a mid-December visit to campus. Pictured are, left to right: Virgil Ellerbruch, head of Electrical Engineering, Darrel Ramhorst, Interstates vice president; John Franken, Interstates president, Duane Sander, dean of Engineering, and Wayne Knabach, electrical engineering professor.*

## Interstates Electric increases its engineering scholarship

**I**nterstates Electric and Engineering of Sioux Center, Iowa, increased its scholarship fund \$5,000 this year.

The 30-year-old company, an international firm in electrical design and installation of large industrial projects, established the Interstates Electric and Engineering Scholarship Fund with \$7,500 in 1989 and increased it by \$3,000 in 1991. The endowment program was provided to strengthen the profession by attracting scholars to seek careers in electrical engineering and to encourage scholarship recipients, when they are enjoying success in their professional endeavors, to offer similar financial assistance.

Darrel Ramhorst, SDSU alumnus and vice president of Interstates Electric, knows just how crucial that financial help can be.

"I know how important that scholarship is to students because I was a Briggs Scholar when I was here," Ramhorst said. "That's how I got through. I really appreciated that scholarship at that time."

Ramhorst began working for Interstates Electric as a student at SDSU. John Franken, Interstates Electric president, said Ramhorst stood above the crowd from the very beginning. "When he applied (for a job), he did it different than anyone else," he said. "Most tell you what they can't do and what they don't know. Darrel told me how good he was." Then, Franken said, he went on to prove it.

Back in 1958, Ramhorst began spending every Christmas and summer break working for Interstates Electric. He lived in student housing, old metal barracks located where the Student Union is now. He built quonsets in the

barracks and Franken picked them up.

"So we were in the control business way back then," Franken said.

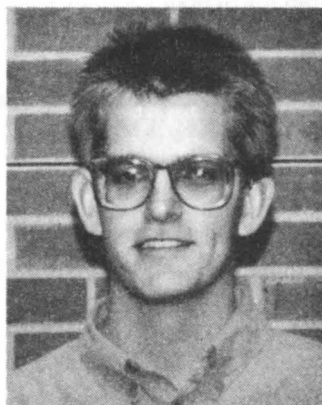
Ramhorst graduated from SDSU with an electrical engineering degree in 1962. This was shortly after the Russians launched the Sputnik, so the Air Force was encouraging ROTC engineering students to obtain higher degrees. Ramhorst's first Air Force assignment came as a scholarship to MIT, where he earned his graduate degree. Ramhorst and Franken remained friends throughout this period. By 1968, Ramhorst was with Interstates full time. By 1970, he was vice president.

SDSU gave him a good background, Ramhorst said. The low student-teacher ratio and availability of faculty "got me into the whole idea of solving a problem rather than just textbook-type answers," he said.

The continued high calibre of SDSU College of Engineering graduates has impressed both Franken and Ramhorst.

"We've always found the Midwest in general and the Dakotas in particular a better work ethic and better work effort than other parts of the country, and we work nationwide," Ramhorst said. "There's no place we get the quality of work better than right here."

Franken agreed. "Wherever we apply for an engineer, we feel very comfortable when it's from here," he said. "The power engineering courses here are exactly what our needs are. The results have been good. And Darrel has a relationship built here that is very helpful."



*Junior Dayton Lee TenHaken of Hull, Iowa, is this year's Interstates Electric scholarship recipient.*

## Ag engineering endowment created

The Mr. and Mrs. Chin Chow Chu Endowment for Agricultural Engineering at SDSU has been established by Dr. Shu Tung Chu, professor of agricultural engineering at SDSU, and his wife, Alice, in honor of Dr. Chu's parents.

The primary purpose for the fund is to provide a graduate assistantship for Ph.D. students who show potential for making a significant contribution to agricultural engineering.

Chin Chow Chu was born in 1902 to a peasant family in Hwang-Mei county, Hu-Bei province in China. He finished high school on a missionary scholarship and went abroad to Japan, where he received a bachelor's degree from the University of Commerce in Tokyo. After graduation he returned to China and was employed by the Federal Reserve Bank of China in Shanghai. He married Dee Ching Hsu in 1933. The couple had four children.

Mrs. Dee-Ching Chu was born in 1902 in Yang-Chow city, Chiang-Su province. She graduated from the School

of St. Mary and the University of Shanghai

During World War II, Mr. Chu worked at several banks in an unoccupied region of China, while his family stayed in Shanghai, which was under Japanese control. He returned to Shanghai in 1943 and was captured by the secret police. He was later released through the efforts of Mrs. Chu and his friends.

After the war Mr. Chu became president of the Bank of Taiwan and the family moved to Taipei. He helped establish the currency which set the foundation for the stable economic future of the country. Because he valued education, he taught in colleges and founded a vocational school, providing scholarships for poor students.

Mr. and Mrs. Chu came to the United States because of poor health in 1990, living in Richland, Wash., under the care of their daughter, Mrs. Shu Shih Yung. Mr. and Mrs. Chu died in 1991, she in July and he in November.

## Speakers Fund established

As an example to others and in appreciation for SDSU and its Physics Department, an SDSU Physics Department Speaker's Fund has been established by retired SDSU physics professors Hans Graetzer of Colorado, Perry Williams of Brookings and Bruce Miller of Brookings.

The general purpose of the fund is to provide funds sufficient to attract quality speakers and presenters to the SDSU campus to address topics or issues having to do with technology and society. Access to the presentations is intended to be broad and without cost to the participant.

Speakers will be planned and chosen by a committee. Members will include current faculty of the Physics Department and retired faculty.

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### Contributions made to the Greater State Fund Jan. 1, 1992 - Dec. 31, 1992

Support from alumni has come to be essential to institutions of higher education. Contributions have made possible the development of activities that have won recognition for the SDSU College of Engineering as one of the nation's leaders in engineering education. We have benefited and those who have been generous in their gifts share with us the satisfaction that come from achievements.

## BENEFACTORS (Gifts of \$1,000 or more)

Jasem Yousuf Al-Yousufi, a 1979 Mechanical Engineering graduate, and his wife, Kim, have contributed to the Mechanical Engineering Department.

Mary L. Bartelt, a 1939 SDSU Arts and Science graduate from North Mankato, has contributed to the Everett Dunn Scholarship. Mrs. Bartelt is the daughter of Everett Dunn.

Gerald Bergum, BSMath 1958, professor and head of the Computer Science Department, and his wife, Shirley, provided funds to assist and encourage students in their pursuit of undergraduate degrees in computer science.

Lori Bocklund, BSEE 1983, contributed to the Dan Bocklund Memorial Scholarship established by Lori in memory of her father and in appreciation to SDSU, her alma mater. It will be

## COLLEGE OF ENGINEERING DONORS

awarded annually to SDSU students planning to study in curriculum within the College of Engineering. Students shall also be participating in varsity sports at SDSU.

K. Marvin Bue, BSCE 1931, has contributed to the Marvin Bue Scholarship in engineering at SDSU. It is an open scholarship to students majoring in any engineering curriculum. Mr. Bue has established this scholarship endowment in grateful appreciation for the education provided him by his alma mater. His career of 41 years in engineering has been one of public service, both for the military and the civilian side of the U.S. government.

Robert Crooks, a 1929 Electrical Engineering graduate from Rochester Hills, Mich., has contributed to the Engineering Deans fund. Mr. Crooks has retired from Minnegasco.

Mr. James Dunn, a 1947 SDSU Arts and Science graduate, and his wife, Beverly, have contributed to Mr. Dunn's father's scholarship, the Everett Dunn Scholarship.

Robert Gales, a 1978 Math and Physics major, has created the Robert H. Gales Scholarship Fund. Mr. Gales is manager of the Farmers Co-op in Winner. He is also a generous contributor to the Computer Science, Physics and Math departments.

Harold and La Von Hall, BS 1948, contributed to the Buckley Engineering Endowment. Dr. Hall is retired as Vice President of the Corporate Research Group Staff at Xerox Corporation. He was honored as one of the Distinguished Engineers of the College of Engineering in 1988. He is a member of the Board of Directors of the SDSU Foundation.

Nancy Wilz Haselhorst, wife of the late Donald D. Haselhorst, formerly president and chief executive officer of Nicolet Instrument Corporation in Madison, Wisc., provided funds for engineering equipment.

Vera Johnson has contributed to the Leslie W. "Brick" Johnson Scholarship in Agricultural Engineering. The fund is established to honor the memory of Mr. Johnson, who graduated from SDSU in agricultural engineering in 1933. He retired in 1971 after serving many years with John Deere and Company.

Jerome J. Lohr, CE 1958, owner of the J. Lohr Winery in San Jose, Calif., is chairman of the board of directors of the SDSU Foundation and an SDSU Distinguished Alumnus. He contributed to programs in civil engineering at SDSU.

Barbara Murphy of Olympia, Wash., and the granddaughter of H.C. Solberg, has given money to the H.C. Solberg Loan Fund.

Gordon and Dorothy Olson, Ph.D. AE 1947, are members of the Campanile Society and the Engineering and Nursing Deans Clubs. Dr. Olson is currently with the John Deere Company in

Iowa. The gift was given to the Henry DeLong Scholarship Endowment.

Harvey Owren, BSEE 1941, and his wife, Doris, have been interested in improving instructional methods in engineering and have provided funds to conduct a course called the Harvey Owren Principles of College Teaching for Engineers Seminar.

Mr. Warren Ramseyer of Wooster, Ohio, and a friend of SDSU has contributed to the Civil Engineering Department.

Dale Ryman, BSAE 1935, BSCE 1938, is a former member of the U.S. Navy Seabees and Chief Construction Engineer of the California Division of Highways, now retired. In 1984 he was recognized as the first benefactor of the College of Engineering and received the Distinguished Engineers Award in 1985.

Mrs. Ruby Simpson, a 1924 SDSU Arts and Science graduate and the daughter of H.C. Solberg, has restored the H.C. Solberg Loan Fund for engineering students with a generous contribution. Mrs. Simpson is from Spokane, Wash.

Mrs. Keo L. Smith of Rapid City contributed to the Dwight and Keo Smith Scholarship in Engineering, which Mrs. Smith created to honor her late husband. The scholarship is for mechanical and electrical engineering students. Dwight Smith graduated from SDSU in 1934 with degrees in mechanical and electrical engineering.

Raymond Sundstrom, a 1928 Civil Engineering graduate, and his wife, Helen, of Sioux Falls have contributed to the Engineering Deans Fund. Mr. Sundstrom is a retired engineer from the U.S. Geological Survey and an SDSU Distinguished Engineer.

C. Milo Thelin, BSCE 1924, a senior engineer with the firm of Freese & Nichols, Consulting Engineers and former Director of Public Works for the City of Fort Worth, Texas, has contributed to the Engineering Deans Fund.

Jacqueline Skill Thielen, wife of the late Lawrence R. Thielen, BSEE 1950, founder, chairman of the board and chief executive officer of Avontek, Inc., Palo Alto, Calif., is a continuous donor.

Lansford Trapp, BPhys 1948, MSMath 1950, is a retired professor of SDSU. He and his wife, Frances, have made gifts possible to the Mathematics, Engineering and Physics departments through continuous contributions to the Trapp Family Scholarship Endowment.

Joan S. Trygstad, who earned a civil engineering degree in 1976 and a political science degree in 1977, increased her contribution to the Joan S. Trygstad Fund, a Leaders for Tomorrow scholarship, for the betterment of the College and particularly for programs that will benefit women in engineering. Mrs. Trygstad is a patent attorney in Los Angeles, Calif.

## COLLEGE OF ENGINEERING DONORS

### DEAN'S CLUB

An organization created within the College of Engineering in 1989 is helping to strengthen programs, build scholarships and continuously improve the quality of education offered through the College.

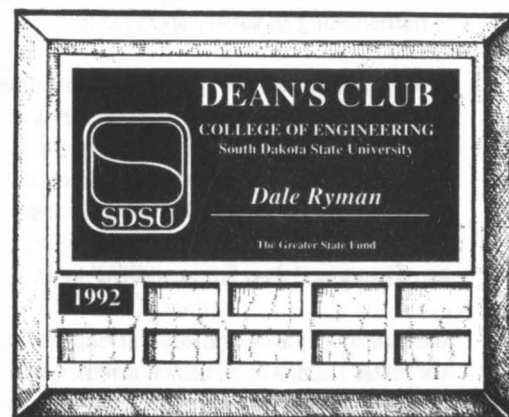
The Dean's Club is comprised of people who contribute \$250 to \$499 annually to the College through the Greater State Fund. Dean's Club members are recognized as devoted friends of the College who make a significant impact on the College's future.

Members receive a walnut and brass desk plaque inscribed with their name, membership listing in the Greater State Fund Honor Roll and College publications, special invitations to University and College events and regular updates from the College dean.

The Dean's Club within the College of Engineering is part of

a larger organization at SDSU which has affiliations within each of the eight colleges. As with all SDSU donor clubs, husband and wife contributions make both eligible for membership.

Also, employer matching gifts count toward the eligibility level.



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Yes, I wish to contribute to the SDSU College of Engineering through the Greater State Fund.

The College of Engineering appreciates the generosity of alumni and friends who have made gifts to the College, and asks that you encourage others to contribute. All donations should be made payable to the Greater State Fund and designated for the College of Engineering. Mail to: SDSU Foundation, Box 525, Brookings, SD 57007

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Nancy A. Stanga	Edmund J. Talbott '50	David F. Tylor '88	Wayne W. Waltz '47	Myron J. Willard '61	Carol A. Zimmer '89
Bernadine M. Starken	Linda L. Talley '75	Douglas Tyler '64	Gavin N. Walz '83	Kathleen E. Willcuts '81	Dennis J. Zimmer '89
George M. Starken '60	Paul R. Tande '61	Minette S. Tyler '86	Dennis L. Wangness '66	Robert K. Willcuts '82	Melvin W. Zimmer '91
David L. Stauffer '64	Delbert S. Tautie '35	Donald A. Ufford '87	Harold L. Wangness '42	Leonard R. Willett '47	Kenneth O. Zoellner '73

# EMPI

*expansion boosts Clear Lake's economy, employment*



*EMPI's manufacturing plant was originally brought to Clear Lake to expand the manufacturing capabilities of the company.*

*Don Maurer, company founder and CEO, and Marlin Bjerke, director of manufacturing, attended SDSU and have experienced first-hand the positive work ethic South Dakotans are noted for.*

Clear Lake's future is looking bright — very bright. Thanks to the recent expansion of the Empi, Inc. manufacturing plant, a facility which builds state-of-the-art electronic medical devices, Clear Lake could see a significant boost to its economy. According to Marlin Bjerke, Empi's director of manufacturing, Empi recently completed a \$250,000 expansion, creating more job opportunities for EMPI employees and their families.

The reason behind EMPI's expansion is simple: increased business. Profits for the first nine months of 1992 increased by about 106 percent over the previous year due to new products, increased manufacturing efficiency in the Clear Lake plant and an expanded sales force. Empi's corporate office is based in St. Paul, Minn.

The EMPI Clear Lake facility increased in three areas: people, plant and product. Empi currently employs more than 100 people, a significant increase from the 10 employees who were hired when the Clear Lake manufacturing plant opened in 1986.

"The group we have here is top-notch," Bjerke said. "We hope to continue on to another 30 to 40 people (in the future)."

Beginning in April 1992, the Clear Lake plant built on an additional 10,000

square feet to the north to make room for the production and distribution areas. This expansion created an additional area for refurbishing and warehousing returned products, as well as an engineering lab and a lunch room.

The EMPI Clear Lake Plant also increased the variety of manufactured products. In addition to producing their traditional electronic medical devices (such as the transcutaneous electrical nerve stimulators and neuromuscular stimulators), the facility has started manufacturing new products such as a female urinary incontinence device and an iontophoresis, a noninvasive drug delivery device, which is used to treat localized pain.

Even EMPI's corporate size is growing. Recently EMPI purchased Nortech, a division of Medtronic, formerly of San Diego, with sales of \$28 million. Bjerke said the Nortech medical products will be manufactured and distributed from Clear Lake.

EMPI's manufacturing plant was originally brought to Clear Lake to expand the manufacturing capabilities of the company. The corporate and sales offices are located in St. Paul. Both Don Maurer, the company founder and CEO, and Bjerke attended SDSU and have experienced first-hand the positive work ethic South Dakotans are noted for.

Bjerke said EMPI's mission is to improve the quality of life by assembling state-of-the-art medical devices. But what about EMPI's future?

"Bright, very bright," Bjerke said. "It's exciting. We're like kids with new toys here. We're just having fun."

# South Dakota State University is interested in YOU

Many companies have asked about the availability of engineering talent as they look at South Dakota for locating or expanding their operations in the state.

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Would you be willing to be a guest lecturer or in some other way share your expertise with our students?

## COMMENTS

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Please return this form with your name, address and phone number, and direct your inquiries and comments to:

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